Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Petition for Rulemaking of NextNav, Inc.)
) WT Docket No. 24-240
Regarding Terrestrial Positioning,)
)
Navigation, and Timing and 5G and)
) RM-11989
Proposed Restructuring of the)
)
Lower 900 MHz Band (902-928 MHz))
)

To: The Commission

COMMENTS OPPOSING NEXTNAV, INC.'S PETITION FOR RULEMAKING AND NEXTNAV, INC.'S PROPOSED PART 90 RULE CHANGES AND ADDITIONS

Pursuant to Sections 1.405(a)[1] and 1.419[2] of the Commission's Rules[3] , the undersigned Commenter hereby submits the Comments set forth below in the above-captioned matter. In submitting the Comments set forth below, this Commenter submits discussion concerning legislation, United States Code provisions, the Commission's Rules[4], regulatory actions, other federal government documents, and statistical, licensee, and equipment authorization data obtained from multiple databases of the Commission. Such discussion is based on information obtained in good faith primarily from federal government sources, which, upon information and belief, is presumed to be correct, but should not be relied upon without verification, as the accuracy of the federal government sources is beyond this Commenter's control, and this Commenter does not provide any guarantee or warranty as to information obtained therefrom. Also, this Commenter provides reasoned assessments of seemingly likely future outcomes based on available information but any forward-looking statements are necessarily speculative, so this Commenter does not provide any guarantee or warranty as to any particular future outcomes or the absence of any such future outcomes. Furthermore, while this Commenter attempts to propose less burdensome alternatives to the proposed rule changes and additions, this Commenter does not guarantee or warranty any alternatives the Commission may choose to adopt. This Commenter expressly disclaims any warranty of merchantability and any warranty of fitness for a particular purpose with respect to such alternatives. This Commenter does not address any possible intellectual property issues or any federal, state, or local legal issues that may relate to such alternatives. This Commenter discourages anyone from relying on the following Comments without the assistance of competent counsel.

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[1] 47 C.F.R. § 1.405(a)
[2] 47 C.F.R. § 1.419
[3] 47 C.F.R.
[4] *Id.*

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SUMMARY

Pursuant to 47 C.F.R. § 1.401(e), the Commission may deny or dismiss petitions which are moot, premature, repetitive, frivolous, or which plainly do not warrant consideration. This Commenter presents herein reasons why NextNav, Inc.'s Petition for Rulemaking (PFR) is moot, premature, or plainly does not warrant consideration.

Pursuant to 47 C.F.R. § 1.407, when a petition fails to disclose sufficient reasons in support of the action requested to justify institution of a rulemaking proceeding, the Commission may deny the petition and notify the petitioner of the Commission's action with the grounds therefor. This Commenter addresses contents of the PFR, showing why the PFR fails to disclose sufficient reasons in support of the action requested to justify institution of a rulemaking proceeding.

The Communications Act of 1934, as amended, (47 U.S.C. § 151 *et seq.*) provides for regulation "...so as to make available, so far as possible, to all the people of the United States...radio communication service with adequate facilities at reasonable charges, for the purpose of national defense, for the purpose of promoting safety of life and property through the use of...radio communications, and for the purpose of securing a more effective execution of this policy...." This Commenter addresses each of the underscored elements above, and the "public convenience, interest, or necessity" of 47 U.S.C. § 307, in relation to the PFR and its ramifications.

This Commenter addresses points set forth in the PFR, its proposed rule changes and additions, and their relations to other statements Petitioner has made. This Commenter urges the Commission deny NextNav, Inc.'s PFR.

PETITION DENIAL OR DISMISSAL UNDER 47 C.F.R. § 1.401(e)

Pursuant to 47 C.F.R. § 1.401(e), the Commission may deny or dismiss petitions which are moot, premature, repetitive, frivolous, or which plainly do not warrant consideration.

Mootness of Petitioner's PFR

Given Congress's implementation of competitive bidding mechanisms (e.g., auctions) for the Commission to use to grant spectrum licenses[5], the extensions of the Commission's statutory authority to continue to use those competitive bidding mechanisms, and the apparent lapse of that authority on March 9, 2023, this Commenter believes the Commission has an obligation to use a mechanism it no longer possesses to grant spectrum licenses, such as what the Petitioner's proposed rule changes and additions would grant the Petitioner. Without clear statutory authority for the Commission to do what the Petitioner requests, this Commenter contends the Petitioner's PFR is moot and would therefore properly be denied or dismissed under 47 C.F.R. § 1.401(e).

Prematurity of Petitioner's PFR

In the event Congress re-establishes the Commission's competitive bidding mechanisms at some later date, Petitioner's filing of Petitioner's PFR prior to such eventual date appears to render Petitioner's PFR premature. Accordingly, this Commenter contends Petitioner's PFR would properly be denied or dismissed under 47 C.F.R. § 1.401(e).

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[5] Omnibus Budget Reconciliation Act of 1993 (P.L. 103-66, §6002)

Consideration of Petitioner's PFR Unwarranted

Our nation was founded upon a "hatred of trade monopolies", with American colonists expressing their displeasure with "the East India Company's trade monopoly by holding the Boston Tea Party.[6]" More formally, Steven G. Calabresi and Larissa Price have argued that "Americans have a constitutional right to be free from government grants of monopoly and other forms of class legislation because of: 1) the rich English and American colonial history with respect to the right to be free from monopolies;...3) the limiting of federal enumerated power to grant monopolies to the patent and copyright context; and 4) the original meaning of the Fourteenth Amendment.[7]" With what this Commenter views as the extraordinarily immodest scope of the Petitioner's PFR to accrete unto itself for its own use and profit large portions of what has long been a true public commons of the spectrum, the 902-928 MHz band, this Commenter contends that core American values dating back to this nation's inception are implicated Accordingly, this Commenter contends consideration of the Petitioner's PFR is unwarranted, and Petitioner's PFR would be properly denied or dismissed under 47 C.F.R. § 1.401(e).

THE PETITIONER'S PFR IN VIEW OF 47 U.S.C. § 151

The very core of the Commission's statutory authority is recited in the Communications Act of 1934, as amended, (47 U.S.C. § 151 *et seq.*), which provides for regulation "...so as to make available, so far as possible, to all the people of the United States...radio communication service with adequate facilities at reasonable charges, for the purpose of national defense, for the purpose of promoting safety of life and property through the use of...radio communications, and for the purpose of securing a more effective execution of this policy...." This Commenter relates below the purposes for which the Commission exists to interests served by denying NextNav Inc.'s PFR.

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[6] Calabresi, Steven G. and Price, Larissa, "Monopolies and the Constitution: A History of Crony Capitalism" (2012). Faculty Working Papers. 214. https://scholarlycommons.law.northwestern.edu/facultyworkingpapers/214
[7] *Id.*

"...So as to Make Available, so Far as Possible, to All the People of the United States..."

The 902-928 MHz band currently does and for a long time has exemplified the realization of the statutory purpose of making available to all the people of the United States a rapid, efficient, Nation-wide radio communication service. The breadth of uses of the shared band is extraordinary. From federal, to Part 18, to Part 90, to Part 97, to Part 15 uses, the band, in its current regulatory form, serves all the people of the United States whether they are efficiently being billed for utility (e.g., electric-power) usage using mesh-networked smart kilowatt-hour meters[8] or toll-road usage using radio-frequency identification (RFID) tags[9] on vehicles, talking on their cordless telephones[10], monitoring their babies with wireless baby monitors[11],.deploying internet-of-things (IoT) networks[12], protecting themselves with security cameras[13], opening their garage doors[14], opening the front door of their home[15], dispensing emergency medical supplies[16], or using any of the innumerable other unlicensed Part 15 devices operating in the affected frequency ranges that pervade homes, schools, businesses, industries, and government. A search on September 4, 2024, of the Commission's Equipment Authorization database for devices operating in the 902-928 MHz band with final action dates since January 1, 2020, returns 6,691 results. Over those 1,708 days, that averages out to one grant every six hours, seven minutes, and 35 seconds around the clock every day. Considering the costs involved in equipment authorization compliance testing in the thousands of dollars[17], a manufacturer can reasonably be expected to produce thousands, tens of thousands, hundreds of thousands, or millions of a Part 15 device. The devices of the 6,691 equipment authorizations since January 1, 2020, would only need to be produced with an average volume of 22,055 units to result in an average production of one device per second over that period, for a total of over 147 million devices. Whatever number of Part 15 devices that have been produced since 2020 does not include the millions of Part 15 devices produced over the preceding decades. In view of that history, which continues unabated, all the people of the United States have not only had a rapid, efficient, Nation-wide radio communication service made available to them; they have been immersed, and continue to be immersed, in the availability of myriad wireless devices serving vast ranges of needs across the nation. Petitioner's proposed rule changes and additions would impair vast benefits available to all the people of the United States in favor of benefit to the Petitioner.

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[8] e.g., Landis+Gyr Gridstream RF enhanced integrated Focus AX meter, FCC ID: R7PEG1R1S2

[9] e.g., Transcore eGo Plus mini sticker tag and its associated reader

[10] e.g., Vtech cordless telephone, FCC ID: EW780-5675-00

[11] e.g., Vtech audio baby monitor – baby unit, FCC ID: EW780-9388-00A

[12] e.g., Mikrotik SIA KNOT LR9 kit, FCC ID: TV7924BT5LR9

[13] e.g., Blink camera, FCC ID: 2AF77-H2041670

[14] e.g., Gentex wireless garage door opener, FCC ID: NZLUAHL5H

[15] e.g., Assa Abloy wireless module to add Z-Wave to smart door locks, FCC ID: U4A-HCPZWL1FM

[16] e.g., American Purchasing Services, LLC smart emergency medical supplies

"...Radio Communication Service with Adequate Facilities..."

As noted above, the vast numbers of unlicensed Part 15 devices in the 902-928 MHz band produced over decades, with continuing new equipment authorizations in the band to the present, provide an abundance of facilities, the beneficial use of which would be lost if Petitioner's proposed rule changes and additions were implemented.

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[17] https://compliancetesting.com/how-much-does-fcc-testing-cost/

"...At Reasonable Charges..."

There are no more reasonable charges than free, and unlicensed operation under Part 15 is exactly that, with no ongoing charges for communications, just the initial purchase price of the equipment itself. The free access to the 902-928 MHz band for use under Part 15 and Part 97 has encouraged investment in equipment on an enormous scale, as discussed above. Accordingly, the costs associated with Petitioner's PFR would be immense for practically everyone but Petitioner. Accordingly, Petitioner's proposed rule changes and additions, if adopted, would run contrary to the "reasonable charges" objective of the Commission prescribed under 47 U.S.C. § 151.

"...For the Purpose of National Defense..."

Curiously, Petitioner stresses "national security" throughout Petitioner's PFR. As the very first sentence on page 1 of the main body of the PFR, Petitioner states, "Positioning, navigation, and timing1 ("PNT") services underpin the U.S. national security, economy, and public safety," without citation of any basis for the statement. On pages 3 and 4 of the PFR, Petitioner presents "Table 1," which includes entries for "Military asset tracking" and "Warfighter situational awareness and navigation," yet "Table 1" provides no citation of any basis for its contents. In a country that has been free of war on its own soil for 150 years, the Petitioner does not explain how a "warfighter" would benefit from Petitioner's proposed rule changes and additions that would be applicable only within the United States. Since Petitioner's "Table 1" appears immediately after Petitioner's citation of "Understanding Vulnerabilities of Positioning, Navigation, and Timing, CISA, https://tinyurl.com/24uh75zn (last visited Mar. 4, 2024)," this Commenter accessed that reference and could find neither above-referenced item mentioned. Thus, Petitioner's PFR appears to fail to demonstrate any basis for Petitioner's mention of "national security," especially within 47 C.F.R. § 151's context of "for the purpose of national defense."

More specific to national defense, Petitioner fails to address in Petitioner's PFR the potential risks of its proposed rule changes and additions to our nation's defense. On page 24 of Petitioner's "FORM 10-K ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 for the fiscal year ended December 31, 2023[18]," Petitioner states as follows:

> "Natural or man-made disasters or terrorist attacks could have an adverse effect on our business.
>
> "Our services are built on a terrestrial-based technical infrastructure, which is vulnerable to damage or interruption from technology failures, power surges or outages, natural disasters, fires, human error, terrorism, intentional wrongdoing or similar events. As a geolocation services provider, there is an increased risk that our technological infrastructure may be targeted in connection with terrorism or cyberattacks, either as a primary target, or as a means of facilitating additional attacks on other targets."

Unlike the current myriad uses of the 902-928 MHz band, which provide resiliency through diversity and which may, in many cases, be only itinerantly present at any particular location and of little use to an adversary, whether a nation-state or a terrorist, Petitioner proposes a network of high-powered transmitters[19] at very precisely determined locations[20] to back up the Global Positioning System (GPS)[21]. In an age of hypersonic weapons and a vast range of armed drone implementations, the Commission must consider the prudence of opening rulemaking oriented toward allowing Petitioner to deploy Petitioner's network when Petitioner admits, "As a geolocation services provider, there is an increased risk that our technological infrastructure may be targeted in connection with terrorism or cyberattacks, either as a primary target, or as a means of facilitating additional attacks on other targets." As Petitioner notes, one adversarial use case can include targeting Petitioner's "technological infrastructure...as a primary target," thereby potentially defeating the benefits Petitioner touts, possibly displacing millions of existing users from a very useful band only to create a false sense of security in a supposed back-up to GPS.

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[18] Accessible from Petitioner's website's link to: https://d18rn0p25nwr6d.cloudfront.net/CIK-0001865631/78844e78-5e98-4061-91a4-e36ab12a1f37.pdf, for which a shortened link is as follows: https://tinyurl.com/3e6pbmyd

[19] In Table 2 of Petitioner's proposed rule addition § 90.1408, Petitioner proposes effective radiated power (ERP) up to 2,000 watts/MHz.

[20] On appendix page A-2 (page 51 of the pdf document) of Petitioner's PFR, Petitioner states, "The coordinates of the antennas of the BSs are determined at sub-meter accuracy (typically better than 50 cm) to enable high-precision timing and position multilateration."

[21] On page v of the Executive Summary of Petitioner's PFR, Petitioner states, "There is an overriding public interest benefit to meeting urgent national security, economic, and public safety needs for terrestrial PNT service to complement and back up GPS."

As Petitioner also notes, another adversarial use case can include Petitioner's "technological infrastructure...as a means of facilitating additional attacks on other targets." This Commenter can envision a variety of scenarios whereby an adversary could use the proposed PNT network to facilitate attacks. Most obviously, an adversary could place a device, such as a user equipment (UE) (e.g., a "cell phone"), on whatever weapon the adversary might employ and use the device to guide the weapon to its target. As a targeting aid, an adversary could place a device, such as a UE, at a target and use the precise positioning information to deliver a weapon to the target. Even if Petitioner were merely to provide its network of precisely located transmitters, an adversary could map the network and use its emissions as a navigation system along the lines of non-directional beacons (NDBs) or very-high-frequency (VHF) omnidirectional ranging (VOR) stations for aircraft navigation. The emissions of a precisely located network of high-powered transmitters could be akin to leaving the lights on in London during World War II. Thus, there are multiple possibilities of exploitation of the proposed system by adversaries.

One aspect of adversarial use of a terrestrial PNT system that seems to have been overlooked is the presumptive dynamics of how an untoward event might unfold. In a time of unhindered operation of GPS, potential customers are faced with a decision whether to continue relying solely on GPS, which has been a good bet for over three decades, or whether to become customers of Petitioner. As Petitioner states on page 13 of Petitioner's Annual Report for the fiscal year ending December 31, 2023, "Forecasting the revenue potential of our services is made more difficult by the fact that legacy location technologies, such as GPS, were developed by the U.S. Federal Government and made available to commercial users without charge." That calculus would change if GPS failed, were disabled, or were destroyed. However, GPS is a constellation of satellites of varying ages and states of health, with the various satellites providing back-up to one another to form a robust collective resource unlikely to altogether fail, as decades of operational experience have shown. Moreover, if GPS were disabled or destroyed, such an event could portend the initiation of hostile action on a broader scale. In that case, a terrestrial PNT system covering only the United States after the loss or impairment of a literally global positioning system would be precisely the opposite of what would be needed for national defense. If, as Petitioner contends, Petitioner's proposed terrestrial PNT system were to provide "Warfighter situational awareness and navigation[22]" within the United States, it could guide adversaries to targets here, but, being limited to the United States, would be useless to the U.S. military to locate and engage targets outside the United States. Accordingly, Petitioner has not shown that its proposed PNT system embraced by its PFR would not be more of a threat to national defense than something "vital to our national security[23]."

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[22] Table 1 on page 3 of Petitioner's PFR

[23] Page i of the Executive Summary of Petitioner's PFR

"…For the Purpose of Promoting Safety of Life and Property…"

While Petitioner uses the word "safety" in the phrase "public safety," in apparent reference to a market segment of public agencies, the one reference this Commenter sees more in line with "promoting safety of life and property" is "Lone worker and worker safety tracking" in Table 1 on page 3 of Petitioner's PFR. However, as with all of Petitioner's Table 1, "Lone worker and worker safety tracking" appears devoid of any citation in support of such a proposition.

By comparison, the existing allocations of the 902-928 MHz band are replete with "promoting safety of life and property." The very first item of the basis and purpose[24] of the amateur radio service under Part 97 of the Commission's rules is "(a) recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications." Amateur radio operators have over a hundred years of history of service to this nation "when all else fails[25]." In Texas, the Texas Radio Amateur Civil Emergency Service (RACES) uses the Texas portion of a large amateur-radio 900 MHz repeater network during exercises and actual incident response requests by the Texas Division of Emergency Management (TDEM) Disaster District Chiefs or the TDEM Communications Coordination Group manager. Amateur radio operators and organizations have longstanding relationships with governmental and non-governmental organizations spanning local, state, and national levels. As an example, this Commenter spent days serving as net control in support of American Red Cross shelter operations after a large earthquake, quickly finding radio signals of an approximate 33cm wavelength to be ideal for such shelter operations in places like school gymnasiums and other large rooms with small windows. Thus, the amateur 902-928 MHz allocation under Part 97 is crucial for promoting safety of life and property.

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[24] 47 C.F.R. § 97.1

[25] "When All Else Fails" is a registered trademark of The American Radio Relay League, Inc., used for its association services, namely, promoting the interests of amateur radio operators who provide emergency communications. This Commenter's remarks are solely his own and are not intended to represent the views of the League or relate to its association services.

Furthermore, Part 15 use of the 902-928 MHz band does much to promote safety of life and property. Whether allowing a mother to monitor her baby using a wireless baby monitor, collecting tolls from rapidly moving vehicles without risk to the drivers or a toll collector, tracking property using RFID tags, avoiding the need for meter readers to risk being bitten by dogs, snakes, mosquitoes, or anything else, the vast range of uses of the 902-928 MHz band under Part 15 contribute greatly to promoting safety of life and property.

"...For the Purpose of Securing a More Effective Execution of This Policy..."

When contemplating the potential ramifications of Petitioner's PFR, this Commenter considers the *status quo* to be the most effective execution of the policy set forth in 47 U.S.C. § 151 for the reasons set forth in detail above. One quantitative metric for Petitioner's PFR not securing a more effective execution of this policy is the amount of information needed to provide PNT services versus the amount of information that could be conveyed over the portions of spectrum Petitioner requests. On appendix page A-7 of Petitioner's PFR, Petitioner states as follows:

> As NextNav's NR technology can transmit at higher effective isotropic radiated power ("EIRP"), 12 similar or superior outdoor and indoor PRS coverage is attainable with a much smaller PRS transmission duration. However, ensuring the orthogonality between the multitude of PRS transmissions from different geographic coordinates, thereby averting self-interference to improve performance, necessitates periodic muting (i.e., a quiet period without any transmission) of certain PRS transmissions. While muting increases the effective duration of channel occupancy by the PRS, using the same muting percentages as in the TBS system in combination with higher transmit EIRP ensures the total PRS overhead is expected to be in the range of 2-5% depending on the BS density and morphology, preserving efficient spectrum utilization.

This Commenter understands "the total PRS overhead is expected to be in the range of 2-5% depending on the BS density and morphology, preserving efficient spectrum utilization" to mean that 95% to 98% of the information that can be conveyed by a 5G New Radio (NR) base station (BS) implementing "NextNav's NR technology" can be used for other traffic, with only 2% to 5% of available capacity needed for Petitioner's "5G positioning reference signal ("PRS")[26]." Put another way, if this Commenter understands Petitioner's statements correctly, Petitioner is requesting the Commission to allocate unto Petitioner, for Petitioner's sole use, 20 to 50 times as much capacity as Petitioner actually needs for Petitioner's PNT implementation. That, in and of itself, should be sufficient grounds for the Commission to deny Petitioner's PFR. It seems analogous to asking the Department of Transportation to pave highway lanes between 160 feet and 400 feet wide to accommodate vehicles of eight-foot maximum width. If this Commenter has misunderstood Petitioner's statement in the above block quote, this Commenter welcomes Petitioner to file a reply comment stating unambiguously for the record the ratio of the information communication capacity of the requested 15 MHz of spectrum to the information communication capacity required solely to transmit Petitioner's PNT signals. As PNT updates may occur at intervals, an unambiguous statement would integrate the entire capacity of the 15 MHz of spectrum not used for Petitioner's PNT signals during and between occurrences of Petitioner's PNT signals. Based on the Commenter's understanding, the Commission's existing rules seem to be the most effective of policy, as promoted by 47 U.S.C. § 151.

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[26] Appendix page A-1 of Petitioner's PFR

THE PETITIONER'S PFR IN VIEW OF 47 U.S.C. § 307

Aspects Bearing upon Public Convenience

This Commenter submits unlicensed operation, such as under Part 15, exemplifies the pinnacle of public convenience. Whether the public convenience of not having to stop at a toll booth and pay a toll to a person or machine to use a road or a bridge but rather merely driving by a toll tag reader, the public convenience of not having to unlock one's gate or bring in one's dog while a meter reader reads a kilowatt-hour meter but rather having the meter invisibly transmit its reading to the electric utility, or the ability to accomplish so many other tasks wirelessly without any burden of red tape or ongoing fees, the public convenience is excellently served by the existing regulatory paradigm of Part 15 operation in the 902-928 MHz band.

By contrast, the Petitioner asks for all of that to be disrupted to create an effective monopoly that would presumably subject its customers to ongoing charges either at the customer level or at the carrier partnership level. The great inconvenience to the public by proceeding toward implementation of the Petitioner's proposed rule changes and additions runs directly against the Commission's statutory mandate to act in the public convenience.

Aspects Bearing upon Public Interest

The interests in this matter are clear. The PFR is in the Petitioner's interest. The *status quo* is in practically everyone else's interest. The *status quo* is in the interest of Part 15 device manufacturers and users. The *status quo* is in the interest of Part 97 manufacturers and amateur radio operators. The *status quo* is in the interest of the governmental and non-governmental organizations and the general public served by amateur radio operators. The *status quo* is in the interest of Part 18 industrial, scientific, and medical (ISM) manufacturers and users. Typical use of the acronym ISM glosses over the words for which those letters stand. The *status quo* is in the interest of industry, of science, and of medicine for Part 18 operation. The *status quo* is in the interest of competitors of the Petitioner in their pursuit of ever-better PNT technologies. Thus, the public interest greatly outweighs the sole interest of the Petitioner.

Aspects Bearing upon Public Necessity

The public necessity is to preserve the large segment of the nation's wireless infrastructure implemented in the 902-928 MHz band over several decades. It really is a necessity that such infrastructure be preserved in its current form. For example, while the Petitioner proposes a greatly reduced band for Part 15 and Part 97 operation, surrounded by its high-ERP uplink and downlink bands, the Petitioner presents no evidence that existing equipment would work properly in the proposed smaller band. For example, RFID tags are produced in high volumes, at low cost, and in small form factors, limiting the technical performance that can be expected of them, for example, the quality factor (Q) of their antennas. While a 902-928 MHz RFID tag might be activated and successfully read near the middle of the band (e.g., at, say, 915 MHz), the Petitioner doesn't provide assurance that its high-powered signals within the 902-928 MHz range in which the RFID tags were designed to operate wouldn't also activate and cause responses from the RFID tags. If RFID tags are deployed on a very wide scale (e.g., on the windshield of nearly every car on the road, as toll tags are), could deployment of high-powered transmitters proposed by the Petitioner potentially cause immense interference very disruptive to communications in the band? With only 30 days to comment, it is a difficult question for this Commenter to answer, but it underscores the technical insufficiency of the PFR. Accordingly, this Commenter contends it is in the public necessity for the Commission to deny the Petitioner's PFR and refrain from initiating rulemaking.

DISINGENUOUSNESS OF TERRESTRIAL PNT (TPNT) SERVICE

On page A-1 of the Petitioner's proposed rule changes and additions, Petitioner proposes the following:

> Eliminate the unnecessary restrictions that currently apply to M-LMS operations, including restrictions on:
> - ○ one-way operations;
> - ○ the types of data that can be transmitted (i.e., only voice and data related
> - ○ location and monitoring functions);
> - ○ the types of permitted operations (i.e., location services only);
> - ○ interconnection with the public switched network in non-emergency scenarios;
> - ○ the amount of M-LMS spectrum that a licensee can hold

Taken together, unlimited two-way operations of unrestricted data and unrestricted operations with interconnection to the public switched network in non-emergency scenarios is tantamount to just another 5G NR band, and Petitioner seems to say as much on page 28 of Petitioner's PFR, where Petitioner states, "Consequently, NextNav proposes that the Commission reconfigure the M-LMS band into a 3GPP-compliant 15-megahertz band to support its hybrid network vision." Part 22 carriers would presumably have to bid for such a 5G NR band at auction (if auction authority had not lapsed), but Petitioner proposes a slight-of-hand approach of removing "the unnecessary restrictions that currently apply to M-LMS operations" in the name of a new TPNT service, when the removal of restrictions would render the new name largely misdescriptive. The Commenter respectfully requests the Commission not lend its legitimacy to such an endeavor.

POSSIBLE ALTERNATIVES

For the Commission to determine if a petition fails to disclose sufficient reasons in support of the action requested to justify institution of a rulemaking proceeding, resulting in the Commission denying the petition, it may be helpful for the Commission to consider what alternatives may be available, where those alternatives may be favorable under the Commission's criteria (e.g., as set out in 47 U.S.C. § 151 or 47 U.S.C. § 307).

Obtaining Suitable Spectrum or Rights to Use It via Free Market

Given the Petitioner's apparent intent to have a "3GPP-compliant 15-megahertz band to support its hybrid network vision" largely free of restrictions and comprising separate uplink and downlink portions amenable to frequency-division duplexing (FDD), the glaring alternative is for the Petitioner to obtain FDD-suitable spectrum or rights to use it from one of the many carriers that have already paid for allocations won at auction. Such a free-market solution provides accurate pricing of the value of the spectrum Petitioner seeks, which Petitioner can weigh against the value Petitioner's PNT technology brings to the market. If the Petitioner's technology is economically meritorious, the Petitioner reaps the rewards of its efforts. On the other hand, if the Petitioner's technology is not worth the spectrum it requires, that reality would be brought to light, avoiding the artificial valuation from the effective subsidy of Petitioner's PFR, which would obscure economic reality while imposing hardship on the public, on amateur radio operators, on Part 15 manufacturers, on state and local governments, and on PNT competitors.

As Petitioner states on page 2 of its Annual Report for the fiscal year ended December 31, 2023, "In addition to our relationship with FirstNet®, built with AT&T, and our public safety offerings, we are continuing to grow our E911 service, including with Verizon, and have licensed our technology to devices operating on the remaining nationwide wireless carriers." Thus, Petitioner appears to already embrace a path forward by working with existing carriers with their own existing 5G NR networks. Such an approach avoids the disruption to the myriad uses of the 902-928 MHz band. Moreover, such an approach brings into question the sufficiency of reasons in support of the action requested to justify the institution of a rulemaking proceeding in the course of the Commission's consideration of Petitioner's PFR under 37 C.F.R. § 1.407. Accordingly, this Commenter contends grounds exist for the Commission to deny Petitioner's PFR.

End Users Can Implement Their Own PNT Capabilities

Another possible alternative is for those who value precise PNT capabilities to provide the same for themselves, without the need for a third-party PNT provider. On page 33 of Petitioner's PNT, Petitioner states as follows:

> "The planned NextGen PNT network will have a topology that resembles other 5G networks. This will facilitate partnerships with existing providers and permit NextNav to leverage the providers' existing deployments. NextNav will augment the network for PNT using its intellectual property and expertise. For example, base stations will be tightly synchronized to the antenna port for accurate ToA estimation, which is essential to calculate the x/y location of user equipment, which relies on the ToA from three or more base stations. For the system to have time resiliency—in addition to resilient synchronization—atomic clocks with long holdover[81] times, such as cesium clocks, will be available at one or more sites in a geographic market, and all the sites in a market will be interconnected by a fixed-wireless mesh. [82] Only a few sites per market will require an independent timing source."

Petitioner has described what any entity with a critical need for precise PNT services could implement themselves. Ironically, Petitioner states "...all the sites in a market will be interconnected by a fixed-wireless mesh," when users Petitioner proposes to displace, such as electric utilities, use fixed-wireless mesh networks, typically in the 902-928 MHz band, to form their smart grids and automate meter reading. If a utility were to use the latitude and longitude values of its meters to establish the propagation delays of paths in its mesh networks, the utility could place a high-stability clock at a point in its network and propagate accurate timing information therefrom, providing its network with precise PNT capability. As the majority of mobile device users have no practical need for precise PNT capability, a self-selection process would provide an economically efficient alternative, where each user could determine the user's x-axis/y-axis accuracy needs, z-axis accuracy needs, and time accuracy needs and provision accordingly on their own, without the need for a third-party PNT provider.

Allow Industry Standards Setting Processes to Provide Solutions

Another alternative is to simply let 3GPP's standards-setting processes evolve the PRS technology within existing 5G NR networks. The Petitioner cites some 3GPP Technical Specifications (TSs), such as TSs 36.355, 37.355, 37.857, 38.101-1, 38.211, 38.214, 38.305, 38.855, and 38.901. To more fully establish the record of 3GPP TSs which provide potential alternatives to Petitioner's PFR, this Commenter notes the following:

36.111 Location Measurement Unit (LMU) performance specification; Network based positioning systems in Evolved Universal Terrestrial Radio Access Network (E-UTRAN)

36.112 Location Measurement Unit (LMU) conformance specification; Network based positioning systems in Evolved Universal Terrestrial Radio Access Network (E-UTRAN)

36.305 Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Stage 2 functional specification of User Equipment (UE) positioning in E-UTRAN

36.455 Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol A (LPPa)

37. 171 Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA); User Equipment (UE) performance requirements for Radio Access Technology (RAT) Independent Positioning Enhancements

37.571-1 User Equipment (UE) conformance specification for UE positioning; Part 1: Conformance test specification

37.571-2 User Equipment (UE) conformance specification for UE positioning; Part 2: Protocol conformance

37.571-3 User Equipment (UE) conformance specification for UE positioning; Part 3: Implementation Conformance Statement

37.571-4 User Equipment (UE) conformance specification for UE positioning; Part 4: Test Suites

37.571-5 User Equipment (UE) conformance specification for UE positioning; Part 5: Test scenarios and assistance data

38.171 NR; Requirements for support of Assisted Global Navigation Satellite System (A-GNSS)

38.215 NR; Physical layer measurements

38.355 NR; Sidelink Positioning Protocol (SLPP); Protocol Specification

38.455 NG-RAN; NR Positioning Protocol A (NRPPa)

The foregoing documents are available from the 3GPP website (https://portal.3gpp.org).

This Commenter submits the 3GPP PRS standardization process, which can be implemented in existing 5G NR bands, offers yet another alternative much better serving the public convenience, interest, and necessity than the Petitioner's PFR.

PROPOSED RULE CHANGES AND EFFECTS ON PART 15 AND PART 97

On page 30 of Petitioner's PFR, Petitioner states as follows:

> D. Commitment to Working with Other Stakeholders and Providing Appropriate Protections
>
> NextNav will work with Lower 900 MHz Band incumbents, 95 including federal (radiolocation, fixed, and mobile), ISM, and non-M-LMS, amateur, and unlicensed (as identified in Figure 4, supra).

On page 31 of Petitioner's PFR, Petitioner states as follows:

> Part 15 devices. Coexistence between the NextGen system and unlicensed Part 15 operations should be achievable. Part 15 devices must coexist with one another in addition to other operations in the band. As a result, Part 15 devices need to be robust and adapt to ever-present interference, including mutual Part 15 interference, which is unpredictable by nature. NextNav is completing technical analyses intended to address representative Lower 900 MHz Part 15 uses and will work with unlicensed users to understand their spectrum requirements.

While Petitioner to focus on "ever-present interference, including mutual Part 15 interference," Petitioner neglects to mention the effects of its proposed TPNT operations at up to 2,000W/MHz ERP and its near-wholesale proposed deletion of the safe-harbor provisions of the current § 90.361 "Interference from part 15 and Amateur operations."

On page 32 of Petitioner's PFR, Petitioner states as follows:

> Amateur operators. In 2013, the American Radio Relay League acknowledged "M-LMS 'was already allocated with a higher priority'" and opted not to file comments in the proceeding weighing whether [NextNav] could deploy M-LMS in 919.750-927.750 MHz.97 Since then, nothing has shifted the band hierarchy. Updating the Lower 900 MHz Band M-LMS framework will not impede amateur operations.

While the Petitioner states, "Updating the Lower 900 MHz Band M-LMS framework will not impede amateur operations," as above, Petitioner neglects to mention the effects of its proposed TPNT operations at up to 2,000W/MHz ERP and its near-wholesale proposed deletion of the safe-harbor provisions of the current § 90.361 "Interference from part 15 and Amateur operations."

For the foregoing reasons, the Commenter respectfully requests the Commission to deny the Petitioner's PFR.

CONCLUSION

Wherefore, for the foregoing reasons, this Commenter respectfully requests the Commission to act in accordance with this Commenter's recommendations above.

Respectfully submitted,

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Dated: September 5, 2024

PROOF OF SERVICE

Pursuant to 47 C.F.R. § 1.47, this Commenter has served the enclosed Comments on or before the day on which they were filed upon Petitioner and Petitioner's Attorney by the following means:

Deposited in first-class U.S. Mail to:

NextNav, Inc.
484 Oakmead Parkway
Sunnyvale, CA 94085

on September 5, 2024, at 10 : 20 UTC, at
United States Post Office
3201 Bee Caves Road
Austin, Texas 78746

and

Electronic mail to:

Gary Parsons
gary@nextnav.com

and

Bruce A. Olcott
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on September 5, 2024, at 09 : 52 UTC
by: the first name of the undersigned at rdsip.com
of: PMB 1173 STE 650
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Ross Snyder

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Dated: September 5, 2024